

The following Listing of the Claims represents all the pending claims in the present application:

Listing of The Claims:

1. A composition for identifying a nucleotide at a predetermined position of a target polynucleotide in a sample, said composition comprising:
 - (a) an oligonucleotide primer comprising a first sequence which hybridizes to said target polynucleotide immediately 3' of said nucleotide, and a second sequence which does not hybridize to said target polynucleotide in the presence of a third sequence; and
 - (b) an oligonucleotide probe comprising said third sequence which hybridizes to said second sequence of said oligonucleotide primer, said oligonucleotide probe labeled with a first member of a pair of interactive labels.
2. The composition of claim 1, further comprising a first polynucleotide chain terminator, which is incorporated in a template-dependent manner into said oligonucleotide primer by a polynucleotide synthesis enzyme.
3. The composition of claim 2, further comprising one or more of a second, a third and/or a fourth polynucleotide chain terminator, wherein said first, second, third and fourth polynucleotide terminators are not identical.
4. The composition of claim 2, wherein said first polynucleotide chain terminator is labeled with a second member of said pair of interactive labels.
5. The composition of claim 4, wherein said first and second members of said pair of interactive labels interact with each other to generate a signal by fluorescent resonance energy transfer.
6. The composition of claim 1, further comprising a template-dependent polynucleotide synthesis enzyme for incorporating in a template-dependent manner a complementary polynucleotide chain terminator into said oligonucleotide primer.

7. The composition of claim 6, wherein said polynucleotide synthesis enzyme is a JDF-3 DNA polymerase.

8. The composition of claim 2, wherein said oligonucleotide primer comprises a separation moiety that permits separation of said oligonucleotide primer and/or said oligonucleotide probe hybridized to said primer from unincorporated polynucleotide chain terminator, and oligonucleotide probe which is not hybridized to said oligonucleotide primer.

9. The composition of claim 8, further comprising a target moiety specific for said separation moiety, wherein said separation moiety binds to said target moiety to permit said separation.

10. The composition of claim 9, wherein said target moiety is attached to a solid support.

11. The composition of claim 4, wherein said first and second members of said pair of interactive labels are fluorescent molecules which interact with each other to generate a signal by fluorescent resonance energy transfer.

12. A composition for identifying a nucleotide at a predetermined position of a target polynucleotide in a sample, said composition comprising:

(a) an oligonucleotide primer comprising a first sequence which hybridizes to the target polynucleotide immediately 3' of said nucleotide, and is covalently attached to a tag molecule; and

(b) an anti-tag molecule which binds to said tag molecule, said anti-tag molecule labeled with a first member of a pair of interactive labels.

13. The composition of claim 12, wherein said tag molecule is located on the 5' terminal of said oligonucleotide primer.

14. The composition of claim 13, wherein said tag molecule is a first member of a specific binding pair which comprises said first member and a second member.

15. The composition of claim 14, wherein said anti-tag molecule is said second member of said specific binding pair.

16. The composition of claim 15, wherein said specific binding pair is a biotin-streptavidin pair.

17. The composition of claim 1, wherein said second sequence is at the 5' terminal of said first sequence.

18. The composition of claim 1, further comprising a labeled conventional deoxynucleotide, and the other three unlabeled chain terminators, wherein said labeled conventional deoxynucleotide is incorporated into the oligonucleotide primer at a position corresponding to the predetermined nucleotide of the target polynucleotide.

19. The composition of claim 1, wherein one member of the pair of interactive labels is a quencher molecule.

20. A kit for identifying a nucleotide at a predetermined position of a target polynucleotide in a sample, said kit comprising:

(a) an oligonucleotide primer comprising a first sequence which hybridizes to said target polynucleotide immediately 3' of said nucleotide, and a second sequence which does not hybridize to said target polynucleotide in the presence of a third sequence;

(b) an oligonucleotide probe comprising said third sequence which hybridizes to said second sequence of said oligonucleotide primer, said oligonucleotide probe labeled with a first member of a pair of interactive labels; and

(c) packaging materials therefore.

21. The kit of claim 20, further comprising a polynucleotide chain terminator, which can be incorporated in a template-dependent manner into said oligonucleotide primer by a polynucleotide synthesis enzyme.

22. The kit of claim 21, further comprising one or more of a second, a third and/or a fourth polynucleotide chain terminator, wherein said first, second, third and fourth polynucleotide terminators are not identical.

23. The kit of claim 21, wherein said polynucleotide chain terminator is labeled with a second member of said pair of interactive labels.

24. The kit of claim 20, further comprising a template-dependent polynucleotide synthesis enzyme for incorporating in a template-dependent manner a complementary polynucleotide chain terminator into said oligonucleotide primer.

25. The kit of claim 24, wherein said polynucleotide synthesis enzyme is a JDF-3 DNA polymerase.

26. A kit for identifying a nucleotide at a predetermined position of a target polynucleotide in a sample, said kit comprising:

(a) an oligonucleotide primer comprising a first sequence which hybridizes to the target polynucleotide immediately 3' of said nucleotide, and is covalently attached to a tag molecule;

(b) an anti-tag molecule which binds to said tag molecule, said anti-tag molecule being labeled with a first member of a pair of interactive labels; and

(c) packaging materials therefore.

27. The kit of claim 26, wherein said tag molecule is a first member of a specific binding pair which comprises said first member and a second member.

28. The kit of claim 27, wherein said anti-tag molecule is said second member of said specific binding pair.

29. The kit of claim 28, wherein said specific binding pair comprises a biotin-streptavidin pair.

Claims 30-54 are withdrawn from consideration.